



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,728	10/27/2003	Tatsuya Fukunaga	117600	2392
25944	7590	03/09/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			LEE, BENNY T	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

EXPIRATION DATE

- ☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s), _____ days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-14 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-12; 13; 14 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with Informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☒ been received ☐ not been received
☐ been filed in parent application, serial no. _____, filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 O.D. 11; 463 O.G. 213.
14. ☐ Other

BEST AVAILABLE COPY

The disclosure is objected to because of the following informalities: Page 1, 10th line from bottom note that --signal-- should follow frequency for clarity of description; last two lines, note that the sequence "S1 to S5" should be rewritten as --S1, S2, S3, S4 and S5-- for consistency with figs. 19A & 19B. Page 2, lines 2, 9, and page 3, line 4, note that reference to "the diagrams" needs clarification (i.e. which diagrams?). Page 10, line 3 and page 11, 4th line from bottom, note that the respective sequence "4A to 4C" and "25A to 25C" should be correspondingly rewritten as --4A, 4B and 4C-- and --25A, 25B, and 25C-- for consistency with these drawing figures. Page 14, line 7, note that "13 circularly" is vague in meaning and needs clarification. Appropriate correction is required.

The disclosure is objected to because of the following informalities: For the specification description of each drawing figure, note that all reference labels therein should be correspondingly described relative to that figure's specification description. For the description of multiple figures (e.g. figs. 1-3, etc) the reference labels therein should be reference to those drawing figures in which they actually appear (unless they appear in each one of the multiple drawing figures). Appropriate correction is required.

The drawings are objected to because of the following: In figs. 12A, 12B, 19A, 19B, 20, 21A, 21B, 22A, 22B, 23A, 23B, should these drawing figures be designated as --RELATED ART--?. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The

figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 5, 6, 9, 10, 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, note that "the interval in the width direction" lacks strict antecedent basis.

In claim 9, note that it is unclear how "a plurality of propagation regions" recited herein relates to "a region" as recited in claim 1, from which this claim directly depends.

In claim 12, note that it is unclear how "multiple modes" recited herein relates to "another mode" as recited in claim 1, from which this claim directly depends.

The following claims have been found objectionable for reasons set forth below:

In claim 1, fourth paragraph; claim 13, second paragraph; claim 14, first paragraph: note that --said-- should follow "bridging" and "electromagnetic waves"

should be rephrased as --wherein the electromagnetic waves in said another mode-- for a proper characterization.

In claims 1, 13, 14, last paragraph of each claim, note that "and that of" should be rephrased as --and the direction of-- for a proper characterization.

In claims 1, 2, 10, 12, 13, 14, note that --said-- should precede "electromagnetic waves" for consistency of description.

In claim 4, note that "mode" and "formed" should be rewritten to avoid the inappropriate method connotation.

In claim 6, note that "is adjusted by adjusting" should be rephrased for clarity.

In claim 13, line 2, note that "of" should be rewritten as --comprising-- for clarity of description.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 11, 13, 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ivanivsky (cited by applicant).

Ivanivsky discloses a transition between a TEM mode stripline (11) and a TE mode waveguide (19) which is usable in an RF module. Note that the stripline (11) defines a first waveguide having an H field (18) as depicted in fig. 2. Note that waveguide (10) defines a second waveguide having two stacked conductive layers (21, 22) which are electrically connected to each other through conductive layers (23, 24)

and has a hollow region where an H field (32) is present as shown in fig. 1. Note that microstrip (11) includes a substrate (13) surrounding a probe or strip extension (25) which couples with the waveguide (19). Note that by virtue of the H field orientations in the strip line (fig. 2) and the waveguide (fig. 1), respectively, such H fields when coupled will match up. Further, note that ground plane layers (5, 14) of the stripline (11) electrically connects with the stacked conductive layers (21, 22), thereby inherently placing conductive layers (21, 22) at ground potential.

Claims 1, 4, 5, 6, 8, 11, 13, 14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Uchimura et al.

Uchimura et al (fig. 17) discloses a transition between a coplanar line comprising a waveguide conductor (96) disposed in a slot or opening (95) formed in the ground plane of a stacked waveguide (5). The waveguide (5) comprises an alternating stack of alternating conductive and insulative layers including upper and lower conductive layers interconnected by via holes (4). Again as evident from fig. 17, a slot or opening (90) permits the conductor (96) to electromagnetically couple to the waveguide (5) in a direction perpendicular to a stacking direction. Therefore, for such a configuration, the H field in the coplanar line inherently matches with the H field in waveguide (5), as known by those of ordinary skill in the art. As described at col. 5, ls 19, 20, by adjusting the spacing between vias to be less than one quarter wavelength, the coupling of energy from the coplanar line would not have leaked from waveguide (5) and thus optionally propagated therein.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchimura et al.

Although the primary mode of propagation is the TE mode, clearly one of ordinary skill in the art would have found it obvious to have optimized the dimensions of the waveguide such as to have permitted additional propagating modes within the waveguide.

Claims 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchimura et al in view of Takenoshita et al.

Uchimura et al discloses the claimed invention except for the second waveguide having plural propagating regions.

Takenoshita et al discloses a multi-layer stacked waveguide of type disclosed in Uchimura et al. In particular, note that such a waveguide is configured to have branched propagating regions.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the waveguide (5) of Uchimura et al to have been a branched waveguide structure as exemplarily taught by Takenoshita et al. Such a modification would have been deemed obvious in view of the same field of endeavor of the

references (i.e. both pertain to stacked dielectric waveguide structures), thereby suggesting the compatability of the combination.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ivanivksy (cited by applicant) in view of Hamasaki et al.

Ivanivsky discloses the claimed invention except for a penetrating conductor for providing coupling adjustment.

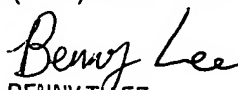
Hamasaki et al (fig. 7) discloses a conductive tuning screw (70) which penetrates a waveguide (12) to provide a coupling adjustment to extended conductor or probe (11) within waveguide (12).

Accordingly, it would have been obvious to have added a conductive tuning screw penetrating waveguide (5) adjacent probe (25) in Ivanivsky et al. Such a modification would have imparted the benefit of an adjustability in the stripline to waveguide transition of Ivanivsky, thereby suggesting the obviousness of such a modification.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stones et al and Proctor both pertain to TEM to waveguide mode transitions.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571) 272-1764.


BENNY T. LEE
PRIMARY EXAMINER
ART UNIT 2817

Lee/ds

03/05/05.